

This listing of claims will replace all prior versions, and listings, of claims in the application:

In the Claims

Claim 1 (Currently amended): An arrayed waveguide grating comprising:

at least a first waveguide having a first width and a first length; [[and]]

a second waveguide having a second width different from the first width and a second length different from the first length;

at least one input waveguide; and

an input slab waveguide optically coupled to the input waveguide, wherein the arrayed waveguide grating is optically coupled to the input slab waveguide.

Claim 2 (Currently amended): The arrayed waveguide grating of claim 1, further comprising:

~~at least one input waveguide;~~

~~an input slab waveguide optically coupled to the input waveguide;~~

~~the arrayed waveguide grating optically coupled to the input slab waveguide;~~

an output slab waveguide optically coupled to the input slab waveguide via the arrayed waveguide grating; and

at least one output waveguide optically coupled to the output slab waveguide[[:]].

Claim 3 (Original): The arrayed waveguide grating of claim 1 wherein the first waveguide comprises an average width which is different from an average width of the second waveguide.

Claim 4 (Currently amended): The arrayed waveguide grating of claim 1 wherein the first width is constant along ~~[[a]]~~ the length of the first waveguide, and the second width is constant along ~~[[a]]~~ the length of the second waveguide.

Claim 5 (Currently amended): The arrayed waveguide grating of claim 1 wherein the first waveguide and the second waveguide each comprise a tapered first end and a tapered second end and an intermediate segment therebetween, wherein the intermediate segment of the first waveguide comprises ~~[[a]]~~ an average width which is constant along a length of the first waveguide and which is different from an average width of the intermediate segment of the second waveguide.

Claim 6 (Original): The arrayed waveguide grating of claim 1 wherein the first waveguide comprises an average width which is different from an average width of the second waveguide such that a standard deviation of a width along a length of the first waveguide divided by the average width of the first waveguide is less than about 0.1, and a standard deviation of a width along a length of the second waveguide divided by the average width of the second waveguide is less than about 0.1.

Claim 7 (Original): The arrayed waveguide grating of claim 1 wherein the first waveguide and the second waveguide each comprise a tapered first end and a tapered second end and an intermediate segment therebetween, wherein an average width of the intermediate segment of the first waveguide is different from an average width of the intermediate segment of the second waveguide,

such that a standard deviation of a width along a length of the intermediate segment of the first waveguide divided by the average width of the first waveguide is less than about 0.1, and a standard deviation of a width along a length of the intermediate segment of the second waveguide divided by the average width of the second waveguide is less than about 0.1.

Claim 8 (Original): The arrayed waveguide grating of claim 1 wherein each of the waveguides in the arrayed waveguide grating comprise buried channel waveguides.

Claim 9 (Original): The arrayed waveguide grating of claim 1 wherein each of the waveguides in the arrayed waveguide grating comprise silica.

Claim 10 (Original): The arrayed waveguide grating of claim 8 wherein the buried channel waveguides comprise silica.

Claim 11 (Original): The arrayed waveguide grating of any of claims 1-10 wherein each of the widths of the waveguides in the arrayed waveguide grating is configured to provide a predetermined polarization dependent wavelength.

Claim 12 (Original): The arrayed waveguide grating of any of claims 1-10 wherein the waveguides in the arrayed waveguide grating are configured according to Eq. 11a.

Claim 13 (Original): The arrayed waveguide grating of claim 12 wherein $\Phi_1=0$ in Eq. 11a.

Claim 14 (Original): The arrayed waveguide grating of claim 12 wherein a variation of average birefringence is caused by a variation in an average width of the waveguides in the arrayed waveguide grating.

Claim 15 (Original): The arrayed waveguide grating of claim 13 wherein a variation of average birefringence is caused by a variation in an average width of the waveguides in the arrayed waveguide grating.

Claim 16 (Withdrawn): The arrayed waveguide grating of any of claims 1-10 wherein the waveguides in the arrayed waveguide grating are configured according to Eq. 11a and Eq. 11b.

Claim 17 (Withdrawn): The arrayed waveguide grating of claim 16 wherein $\Phi_i=0$ in Eq. 11a.

Claim 18 (Withdrawn): The arrayed waveguide grating of claim 16 wherein $\Psi_i = m\lambda_0$.

Claim 19 (Withdrawn): The arrayed waveguide grating of claim 17 wherein $\Psi_i = m\lambda_0$.

Claim 20 (Withdrawn): The arrayed waveguide grating of any of claims 1-10 wherein the waveguides in the arrayed waveguide grating are configured according to Eqs. 15.

Claim 21 (Withdrawn): The arrayed waveguide grating of any of claims 1-10 wherein the waveguides in the arrayed waveguide grating are configured according to Eqs. 16.

Claim 22 (Withdrawn): The arrayed waveguide grating of any of claims 1-10 wherein the waveguides in the arrayed waveguide grating are configured according to Eqs. 17.

Claim 23 (Withdrawn): The arrayed waveguide grating of any of claims 1-10 wherein the waveguides in the arrayed waveguide grating are configured according to Eqs. 18.

Claim 24 (Withdrawn): The arrayed waveguide grating of any of claims 1-10 wherein the waveguides in the arrayed waveguide grating are configured according to Eq. 19.

Claim 25 (Withdrawn): The arrayed waveguide grating of any of claims 1-10 wherein the waveguides in the arrayed waveguide grating are configured according to Eq. 24a and Eq. 24b.

Claim 26 (Original): The arrayed waveguide grating of claim 12 wherein a variable L_i in Eq. 11a comprises non-tapered segments.

Claim 27 (Original): The arrayed waveguide grating of claims 5 or 7 wherein the first tapered end and the second tapered end comprises a length less than about 1 mm.

Claim 28 (Original): The arrayed waveguide grating of any of claims 1-10 wherein a value of $|w_N - w_1|$ is between about 0.5 μm and about 5 μm .

Claim 29 (Withdrawn): The arrayed waveguide grating of claim 28 wherein the value of $|w_N - w_1|$ is between about 1 μm and about 3 μm .

Claim 30 (Currently amended): The arrayed waveguide grating of any of claims [[2-7]] 1-7 wherein the waveguides in the arrayed waveguide grating comprise buried channel waveguides.

Claim 31 (Currently amended): The arrayed waveguide grating of any of claims [[2-7]] 1-7 wherein the waveguides in the arrayed waveguide grating comprise silica.

Claim 32 (Original): The arrayed waveguide grating of claim 30 wherein the buried channel waveguides comprise silica.

Claim 33 (Withdrawn): A method of providing a predetermined polarization dependent wavelength in an optical device comprising:

transmitting light into a first waveguide having a first width and a length;

transmitting the light into at least a second waveguide having a second narrower width and a longer length.

Claim 34 (Withdrawn): The method of claim 33 further comprising transmitting the light into a plurality of additional waveguides, wherein each of the additional subsequent waveguides has an increasing length and a corresponding decreasing width.

Claim 35 (Withdrawn): The method of claim 33 wherein the light is transmitted into the first and the second waveguides simultaneously.

Claim 36 (Withdrawn): The method of claim 33 wherein the light is transmitted into the first waveguide before the second waveguide.

Claim 37 (Withdrawn): The method of claim 33 wherein the light is transmitted into the second waveguide before the first waveguide.